

## Environmental Conditions

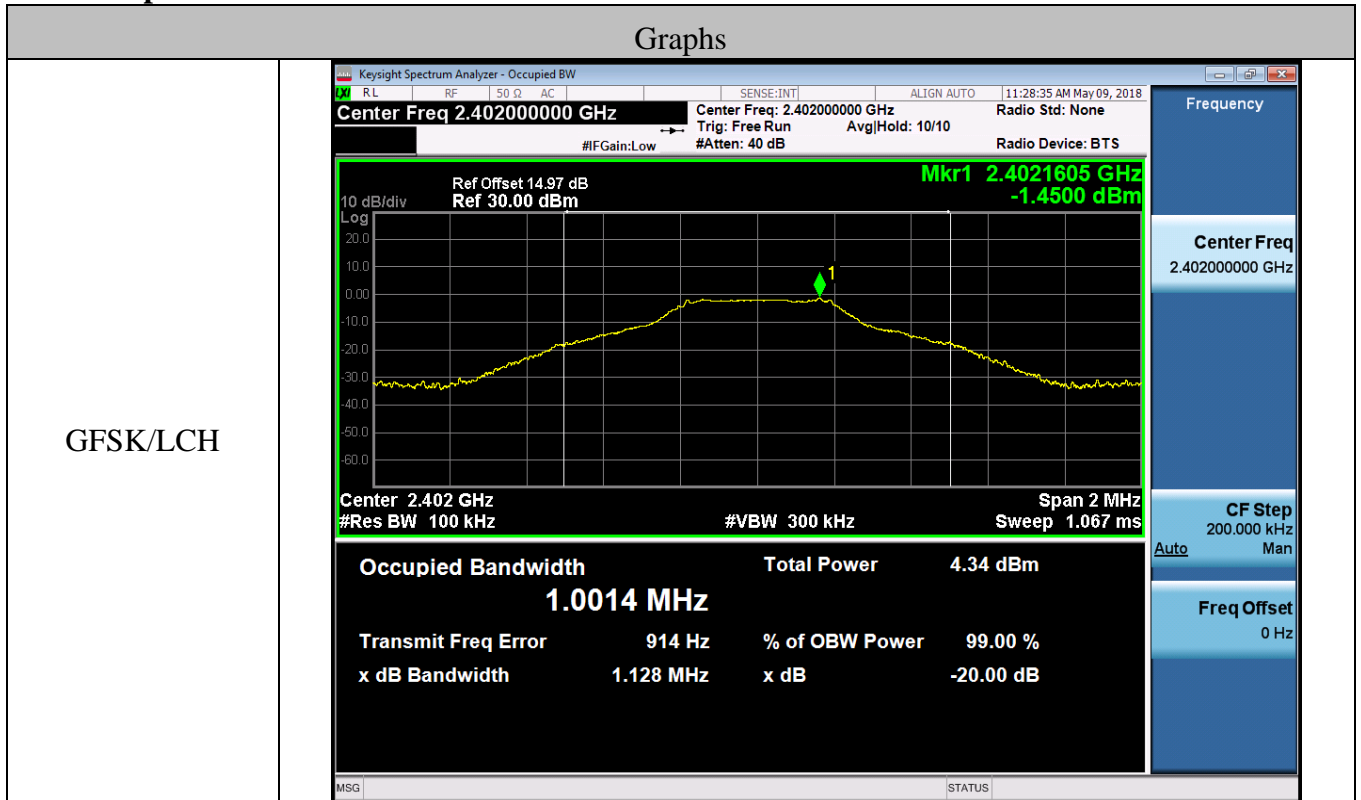
Temperature:	23.5 °C
Relative Humidity:	55.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.xu
Supervised by:	Tom.Liu

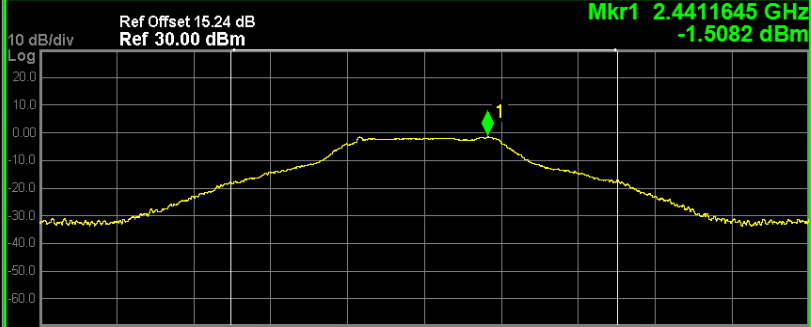

## Appendix A): 20dB Bandwidth

### Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.128	Not Specified	PASS
	MCH	1.137	Not Specified	PASS
	HCH	1.147	Not Specified	PASS

### Test Graph



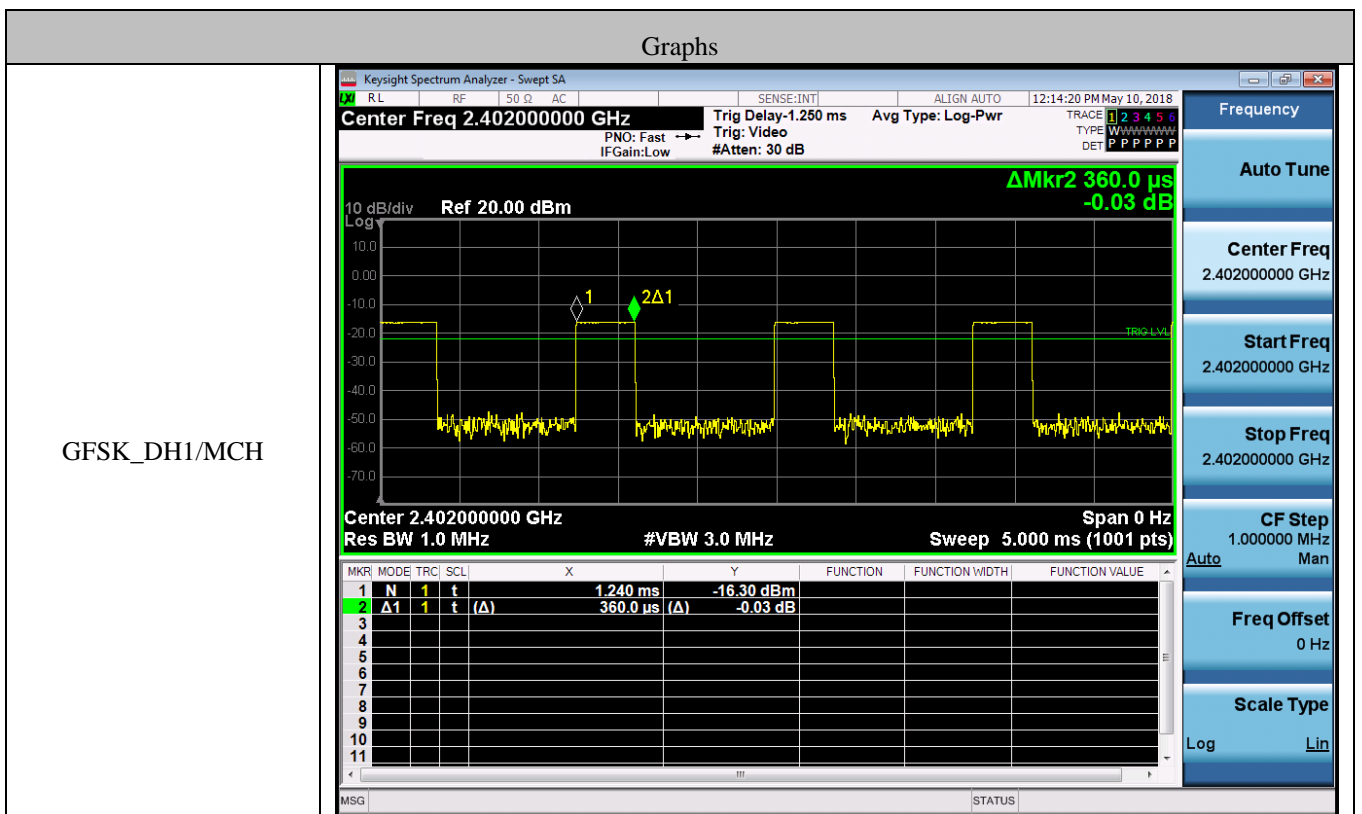
<p>GFSK/MCH</p>	<div><div><div>Keysight Spectrum Analyzer - Occupied BW</div><div><div>RL</div><div>RF</div><div>50 Ω</div><div>AC</div><div>SENSE:INT</div><div>ALIGN AUTO</div><div>11:38:32 AM May 09, 2018</div></div><div><div>Center Freq 2.441000000 GHz</div><div>Center Freq: 2.441000000 GHz</div><div>Trig: Free Run</div><div>Avg/Hold: 10/10</div><div>Radio Std: None</div><div>#IFGain:Low</div><div>#Atten: 40 dB</div><div>Radio Device: BTS</div></div></div><div><div>10 dB/div</div><div>Ref Offset 15.24 dB</div><div>Ref 30.00 dBm</div><div>Mkr1 2.4411645 GHz</div><div>-1.5082 dBm</div></div><div><div>Center 2.441 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 2 MHz</div><div>Sweep 1.067 ms</div></div><div><div>Occupied Bandwidth</div><div>1.0008 MHz</div><div>Total Power</div><div>4.37 dBm</div><div>Transmit Freq Error</div><div>1.198 kHz</div><div>% of OBW Power</div><div>99.00 %</div><div>x dB Bandwidth</div><div>1.137 MHz</div><div>x dB</div><div>-20.00 dB</div></div><div><div>MSG</div><div>STATUS</div></div></div> <div><div>Frequency</div><div>Center Freq</div><div>2.441000000 GHz</div><div>CF Step</div><div>200.000 kHz</div><div>Auto</div><div>Man</div><div>Freq Offset</div><div>0 Hz</div></div>
<p>GFSK/HCH</p>	<div><div><div>Keysight Spectrum Analyzer - Occupied BW</div><div><div>RL</div><div>RF</div><div>50 Ω</div><div>AC</div><div>SENSE:INT</div><div>ALIGN AUTO</div><div>11:41:19 AM May 09, 2018</div></div><div><div>Center Freq 2.480000000 GHz</div><div>Center Freq: 2.480000000 GHz</div><div>Trig: Free Run</div><div>Avg/Hold: 10/10</div><div>Radio Std: None</div><div>#IFGain:Low</div><div>#Atten: 40 dB</div><div>Radio Device: BTS</div></div></div><div><div>10 dB/div</div><div>Ref Offset 15.24 dB</div><div>Ref 30.00 dBm</div><div>Mkr1 2.4801625 GHz</div><div>-1.7341 dBm</div></div><div><div>Center 2.48 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 2 MHz</div><div>Sweep 1.067 ms</div></div><div><div>Occupied Bandwidth</div><div>1.0050 MHz</div><div>Total Power</div><div>4.10 dBm</div><div>Transmit Freq Error</div><div>1.766 kHz</div><div>% of OBW Power</div><div>99.00 %</div><div>x dB Bandwidth</div><div>1.147 MHz</div><div>x dB</div><div>-20.00 dB</div></div><div><div>MSG</div><div>STATUS</div></div></div> <div><div>Frequency</div><div>Center Freq</div><div>2.480000000 GHz</div><div>CF Step</div><div>200.000 kHz</div><div>Auto</div><div>Man</div><div>Freq Offset</div><div>0 Hz</div></div>

## Appendix B): Dwell Time

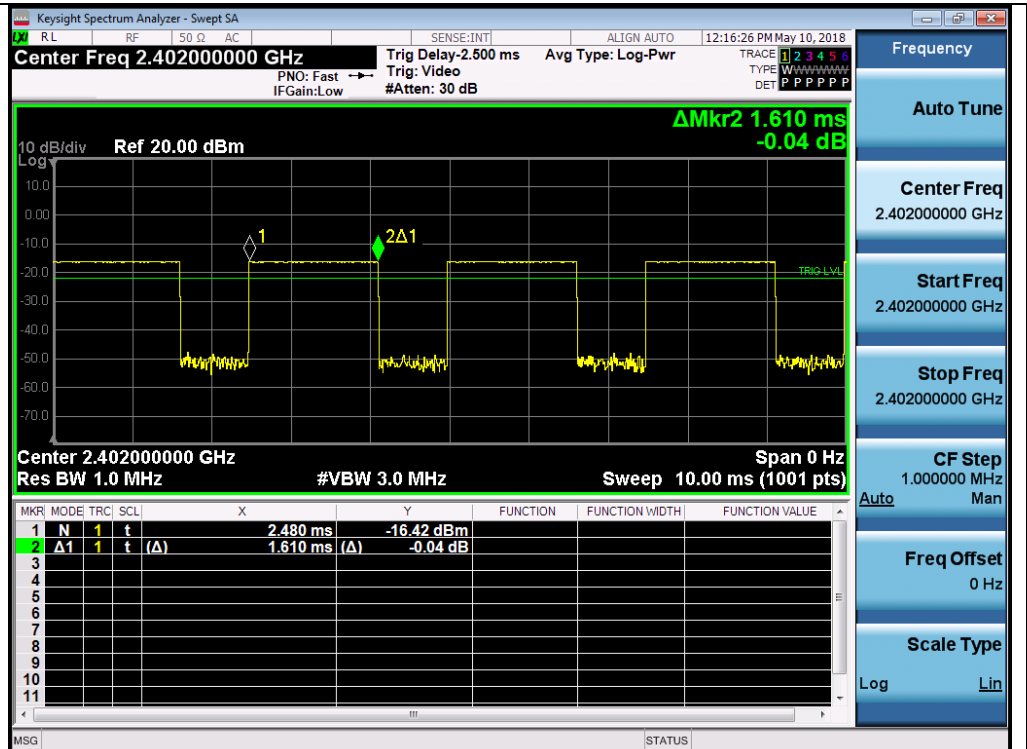
Result Table

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH1	MCH	0.36	320	0.115	0.4	PASS
GFSK	DH3	MCH	1.61	160	0.258	0.4	PASS
GFSK	DH5	MCH	2.85	106.7	0.304	0.4	PASS

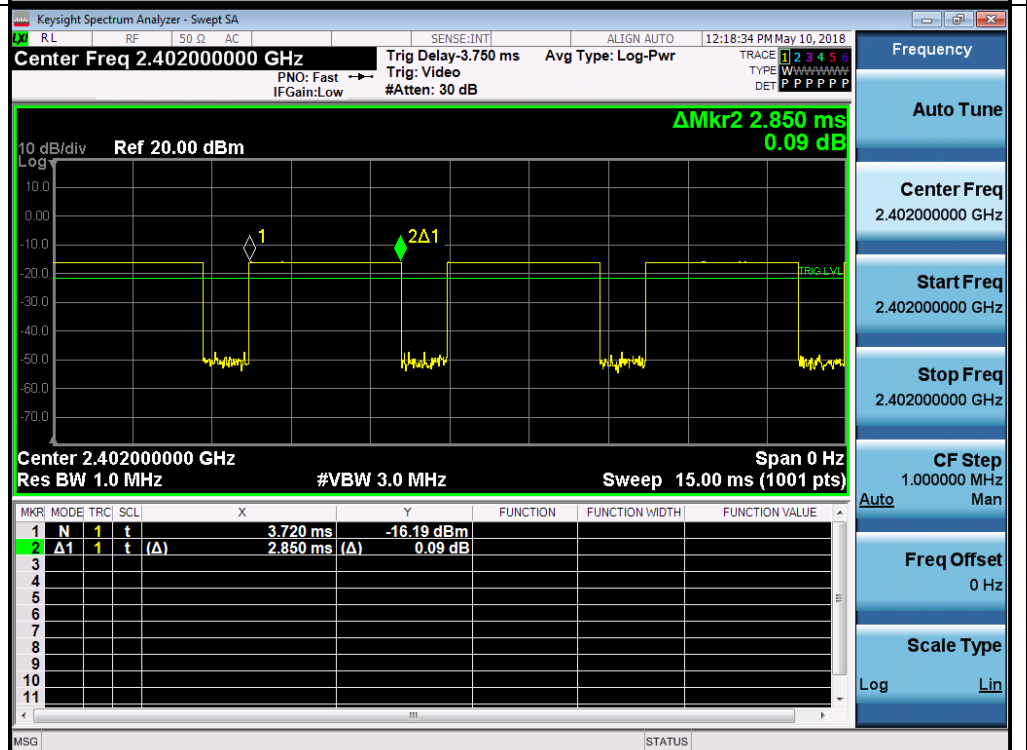
Test Graph



GFSK\_DH3/MCH



GFSK\_DH5/MCH

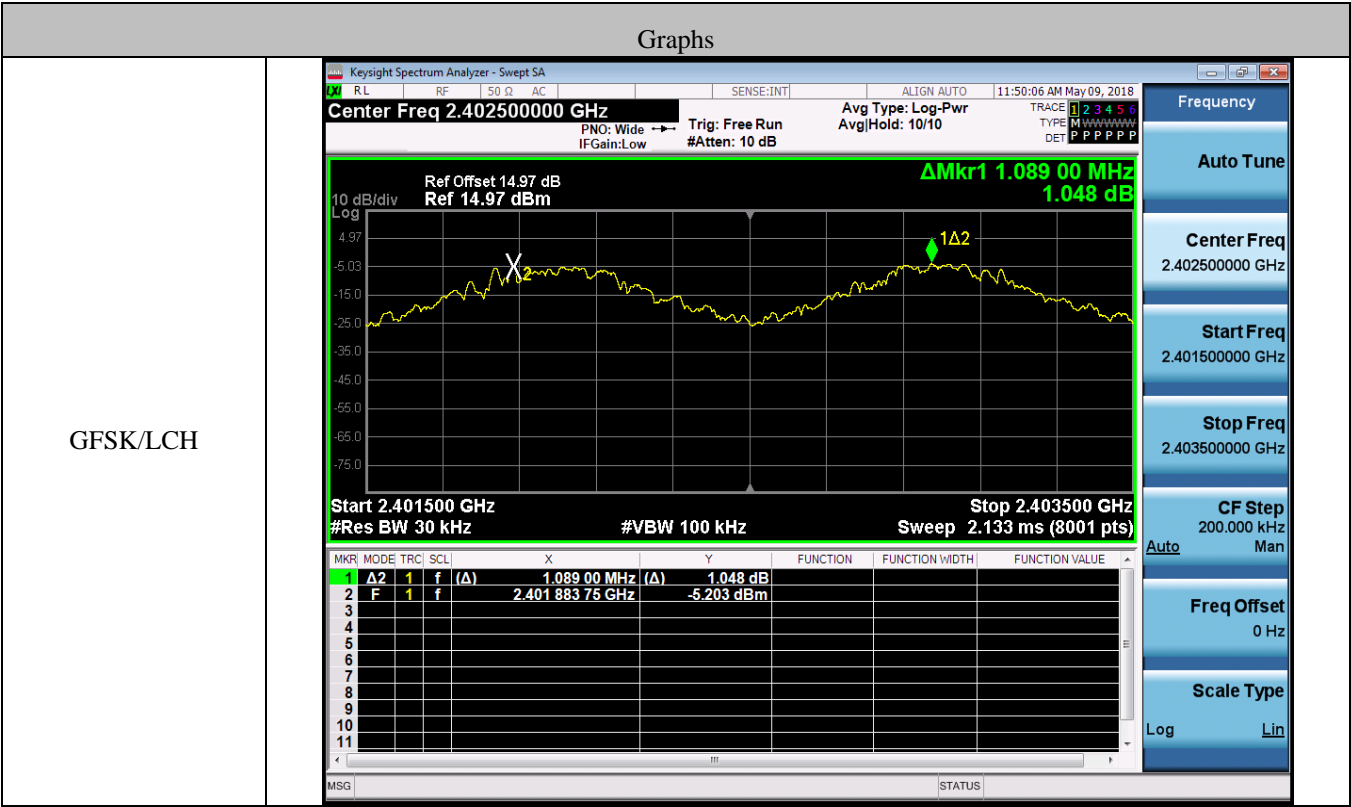


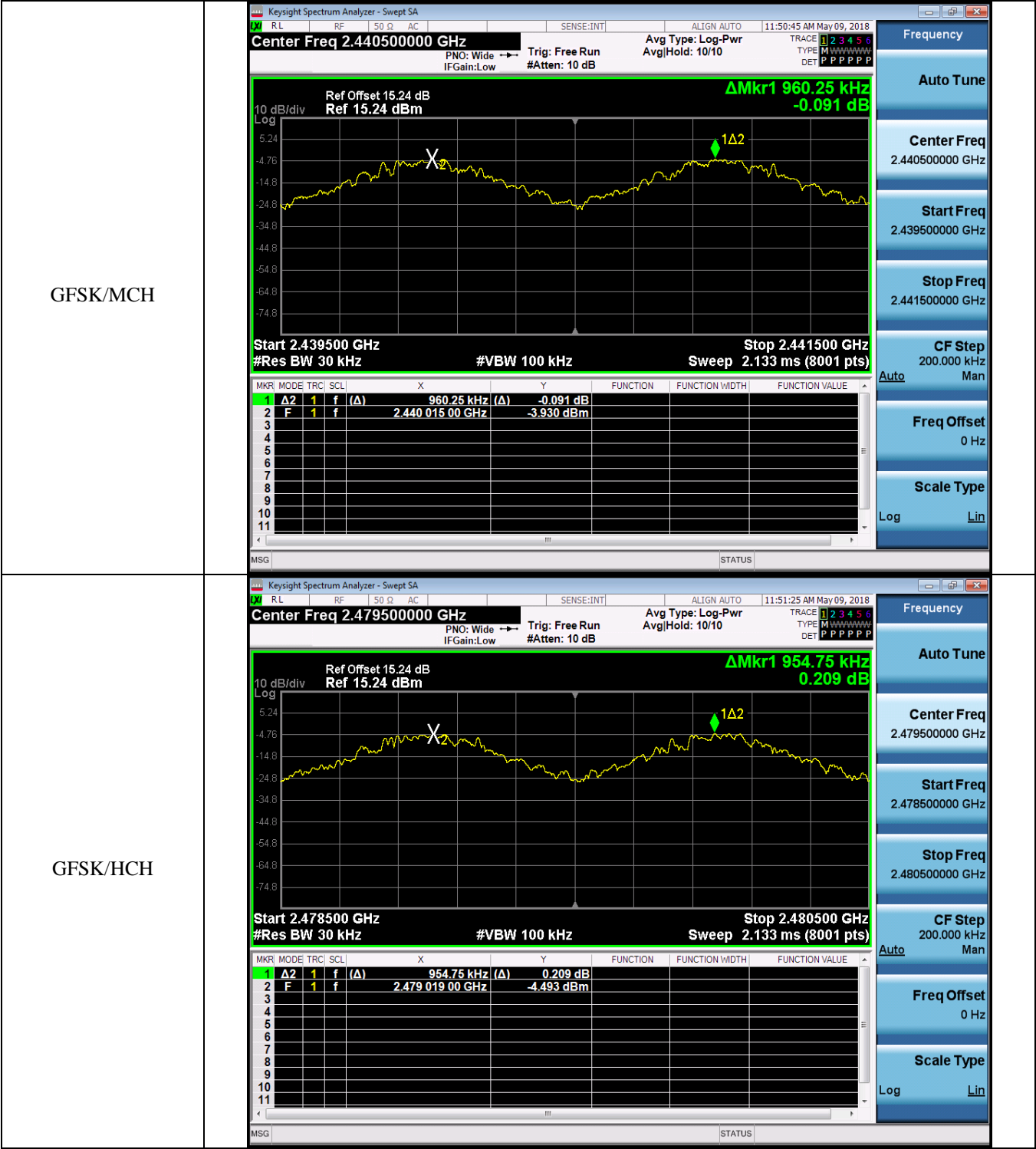
Appendix C): Carrier Frequency Separation

Result Table

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz] 2/3*20dB Bandwidth	Verdict
GFSK	LCH	1.089	0.648	PASS
	MCH	0.960	0.678	PASS
	HCH	0.955	0.687	PASS

Test Graph





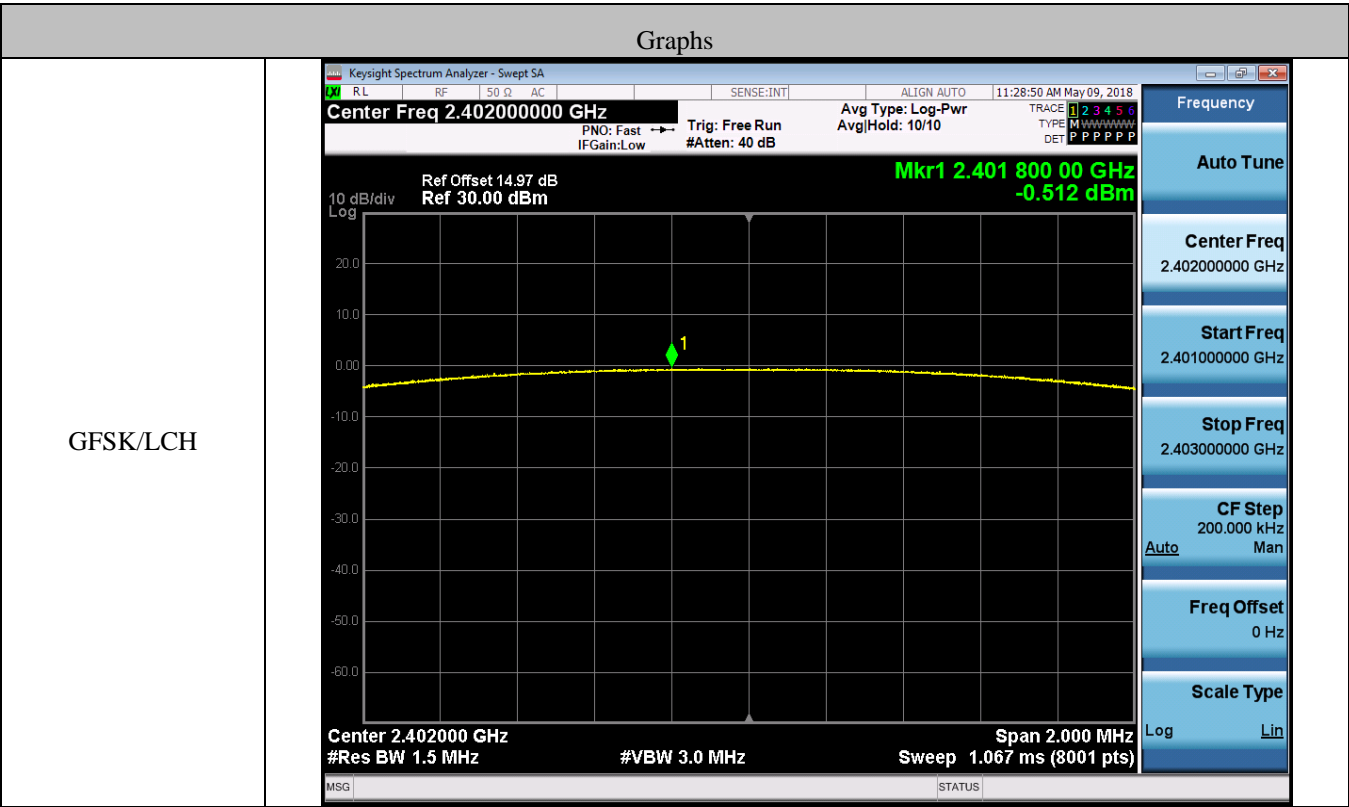


Appendix E): Conducted Peak Output Power

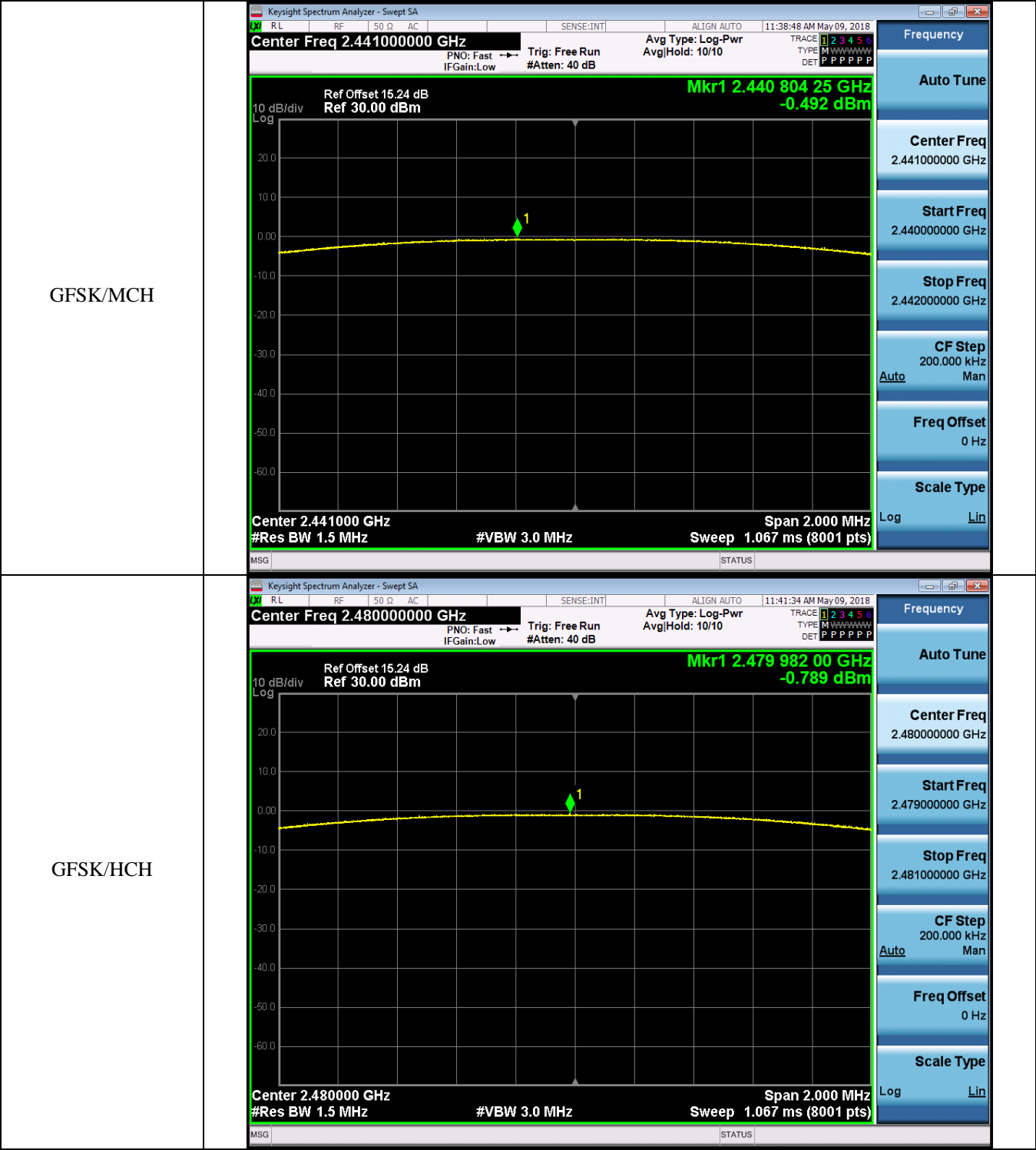
Result Table

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.512	21	PASS
	MCH	-0.492	21	PASS
	HCH	-0.789	21	PASS

Test Graph





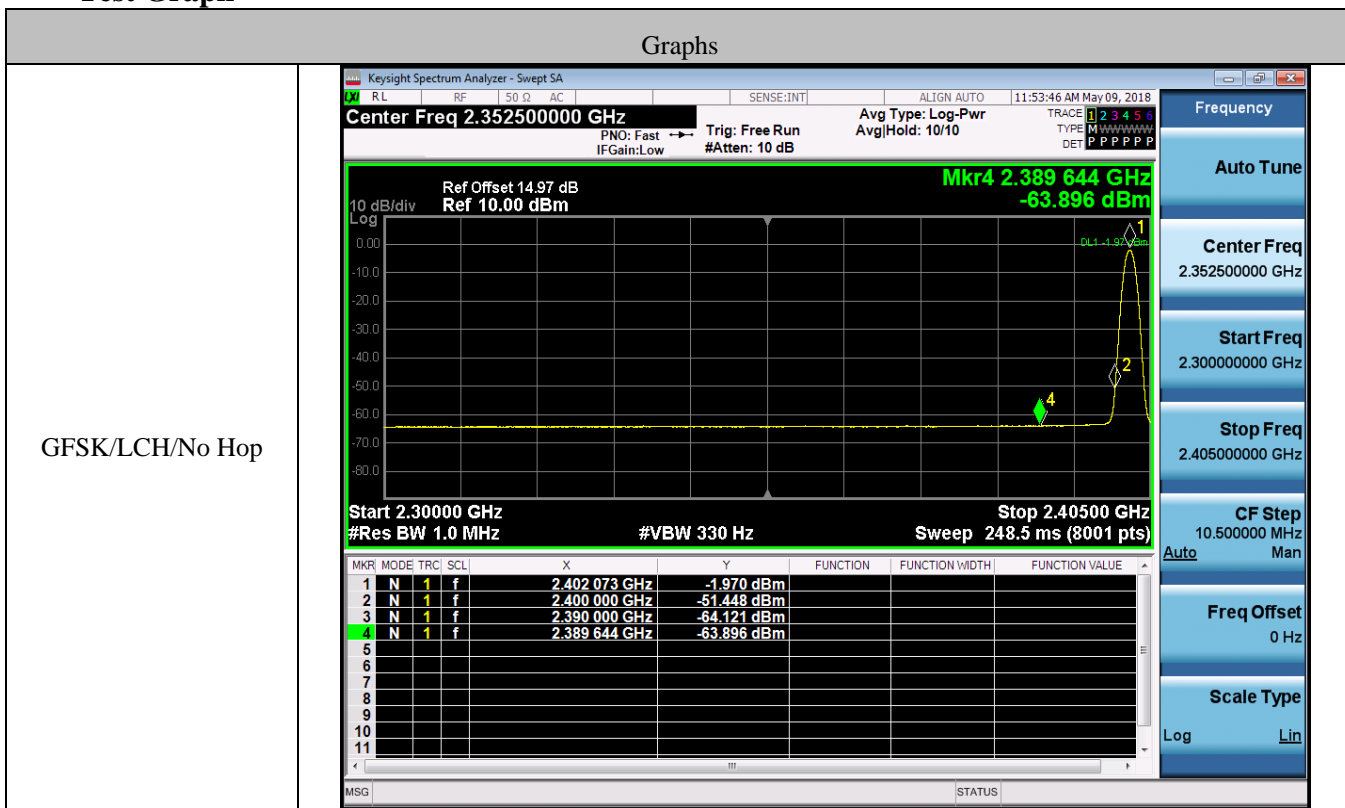


## Appendix F): Band-edge for RF Conducted Emissions

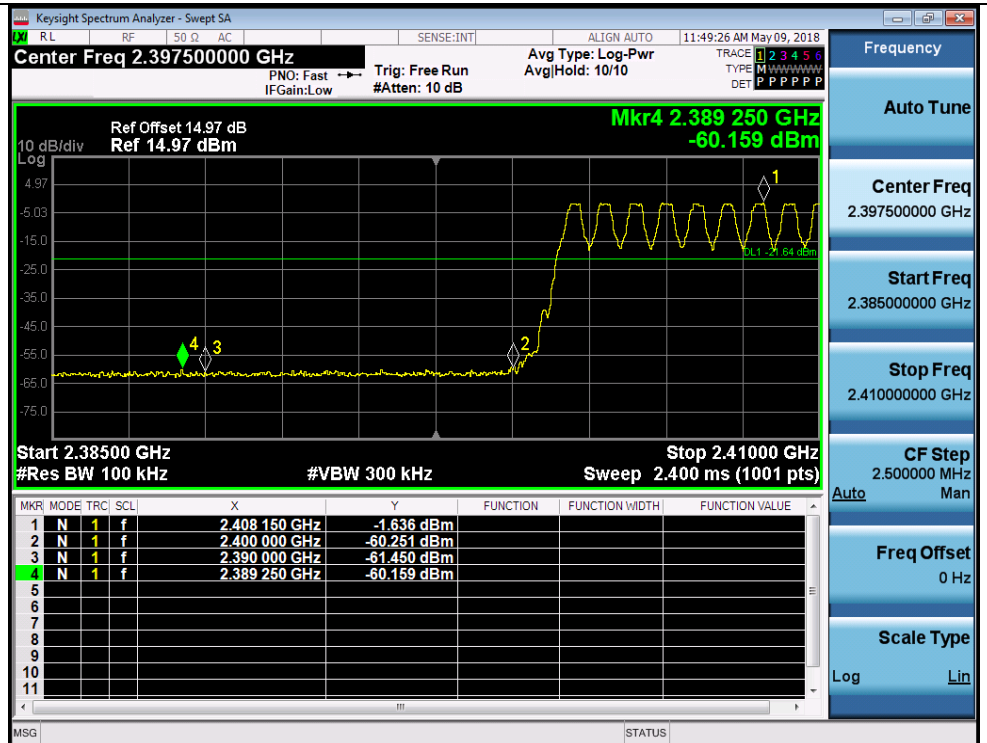
## Result Table

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.970	Off	-51.448	-1.97	PASS
			-1.636	On	-60.159	-21.64	PASS
GFSK	HCH	2480	-2.035	Off	-63.092	-2.04	PASS
			-1.734	On	-59.327	-21.73	PASS

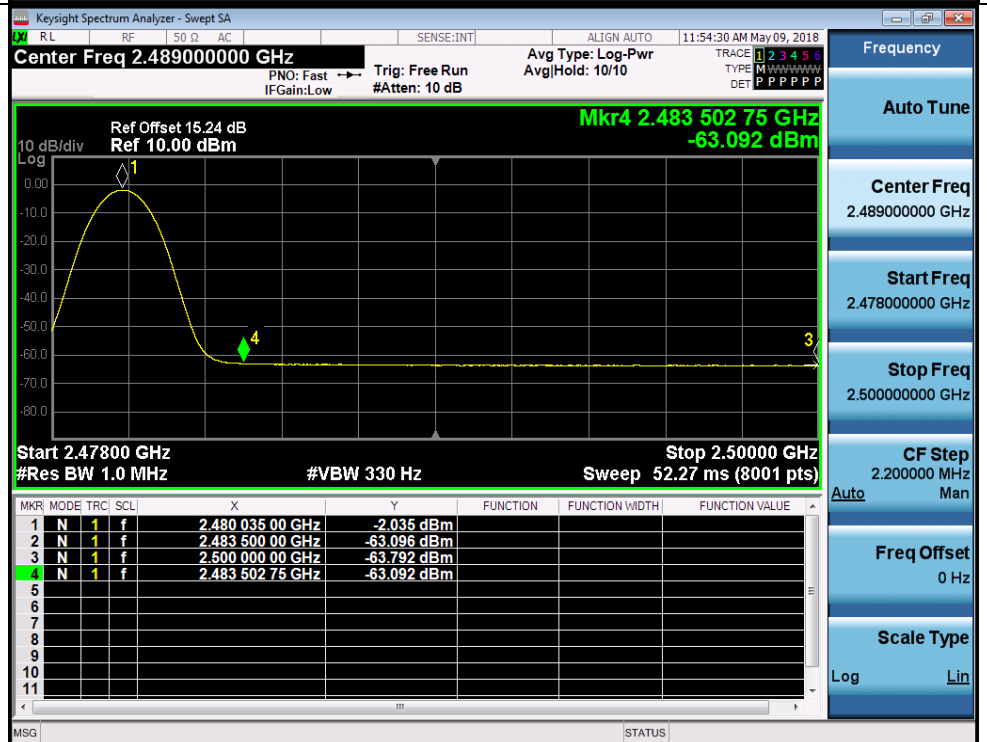
## Test Graph

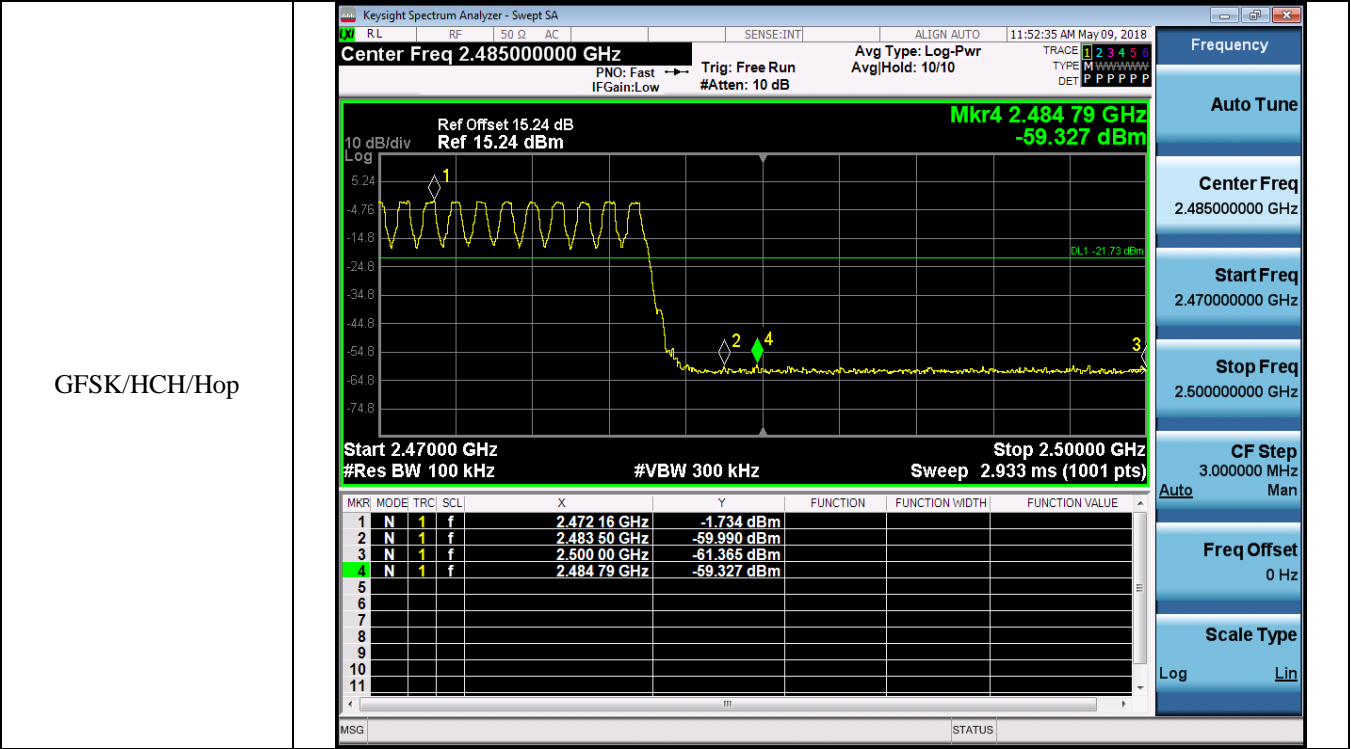


GFSK/LCH/Hop



GFSK/HCH/No Hop



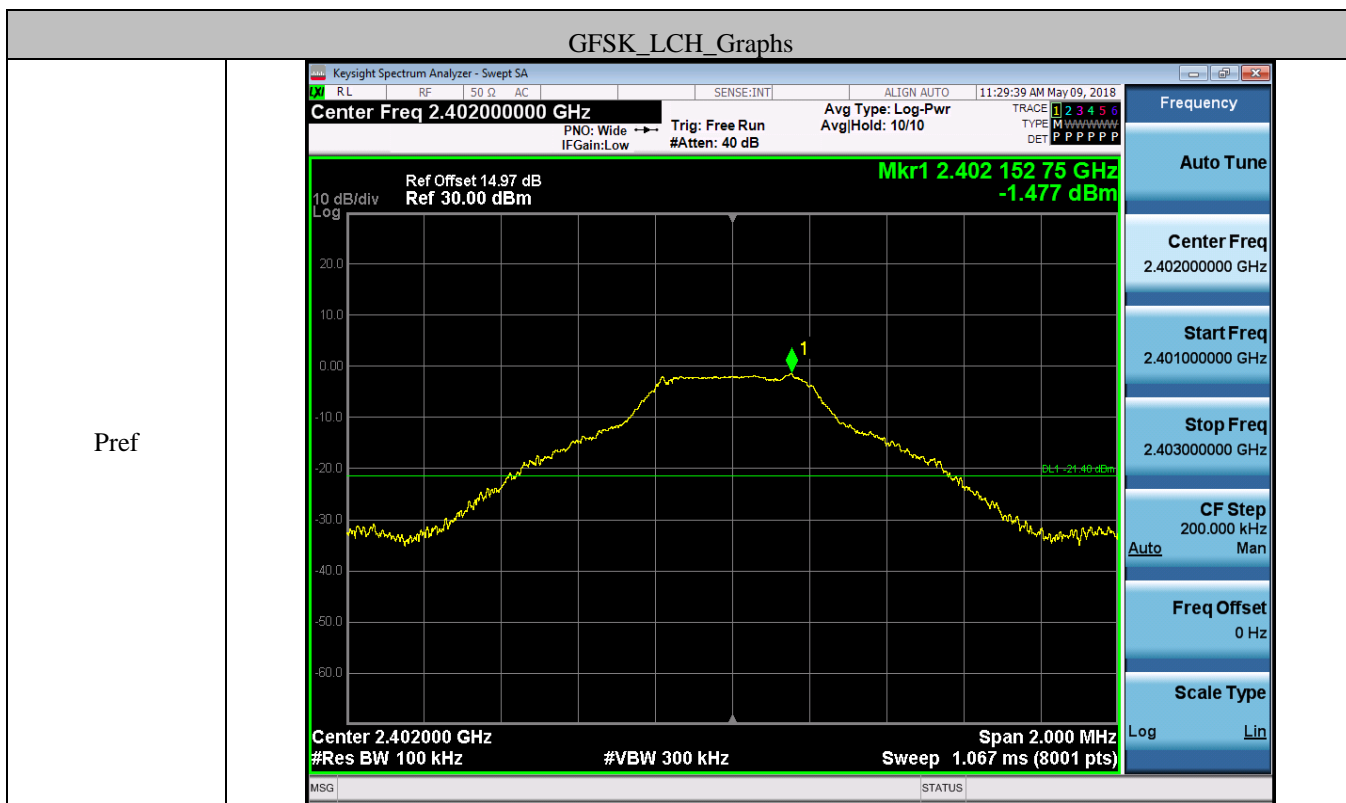


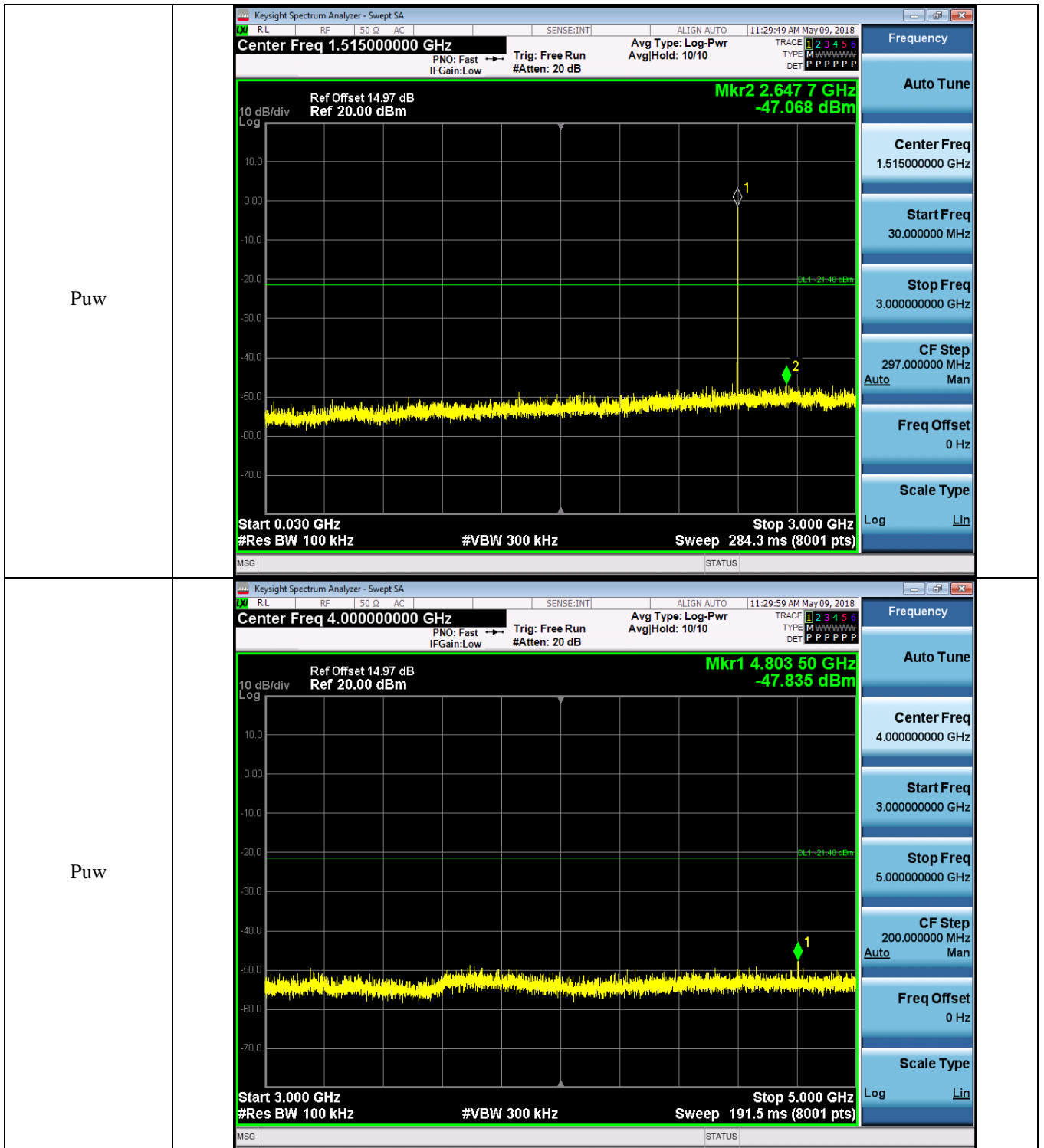
## Appendix G): RF Conducted Spurious Emissions

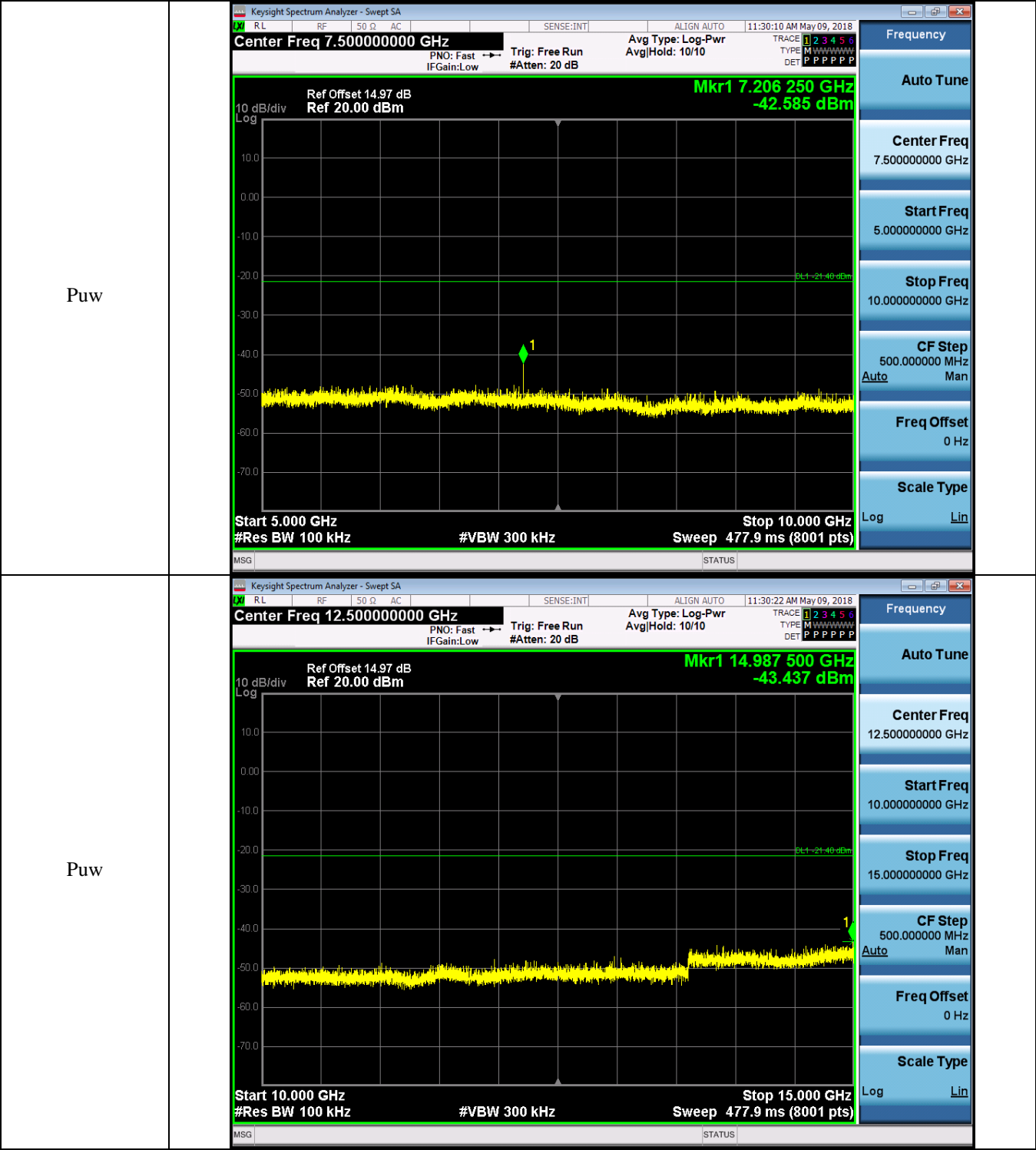
## Result Table

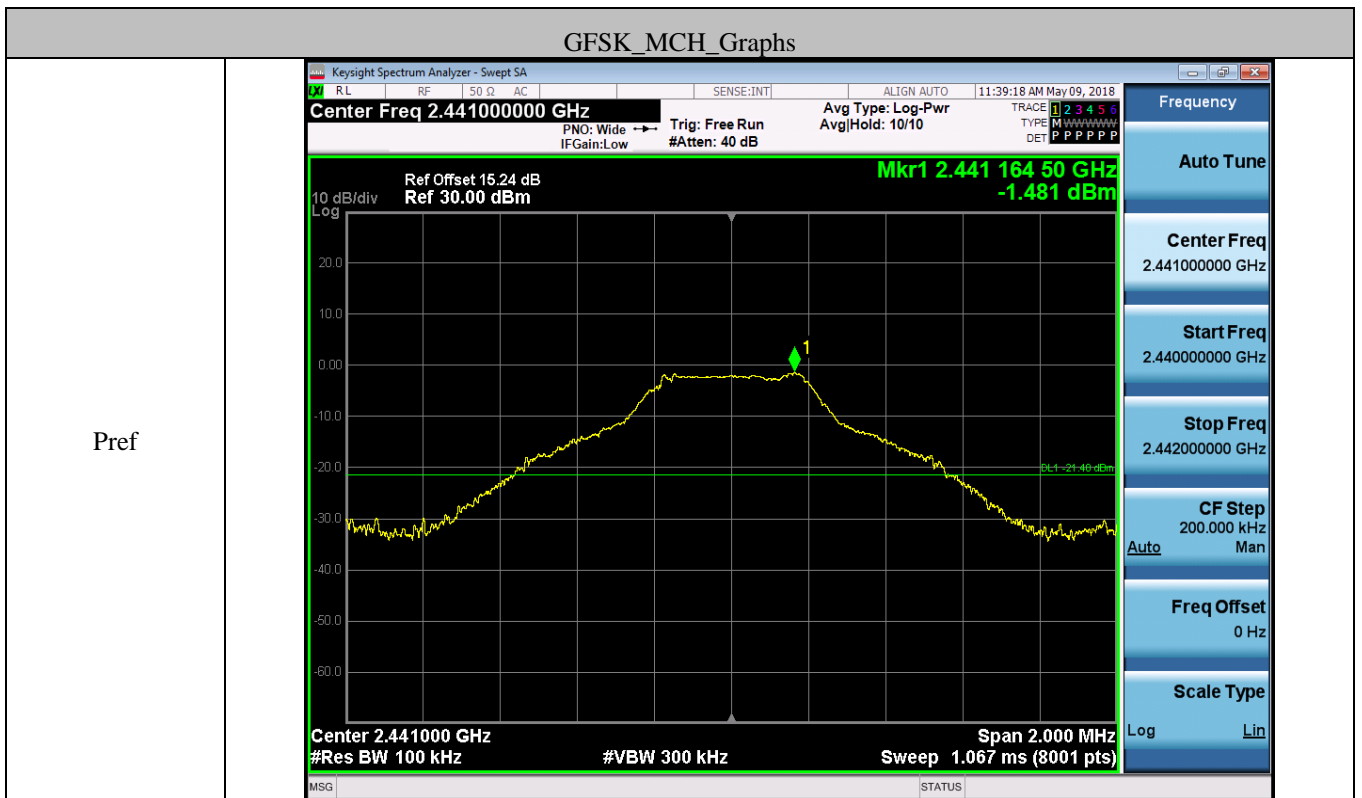
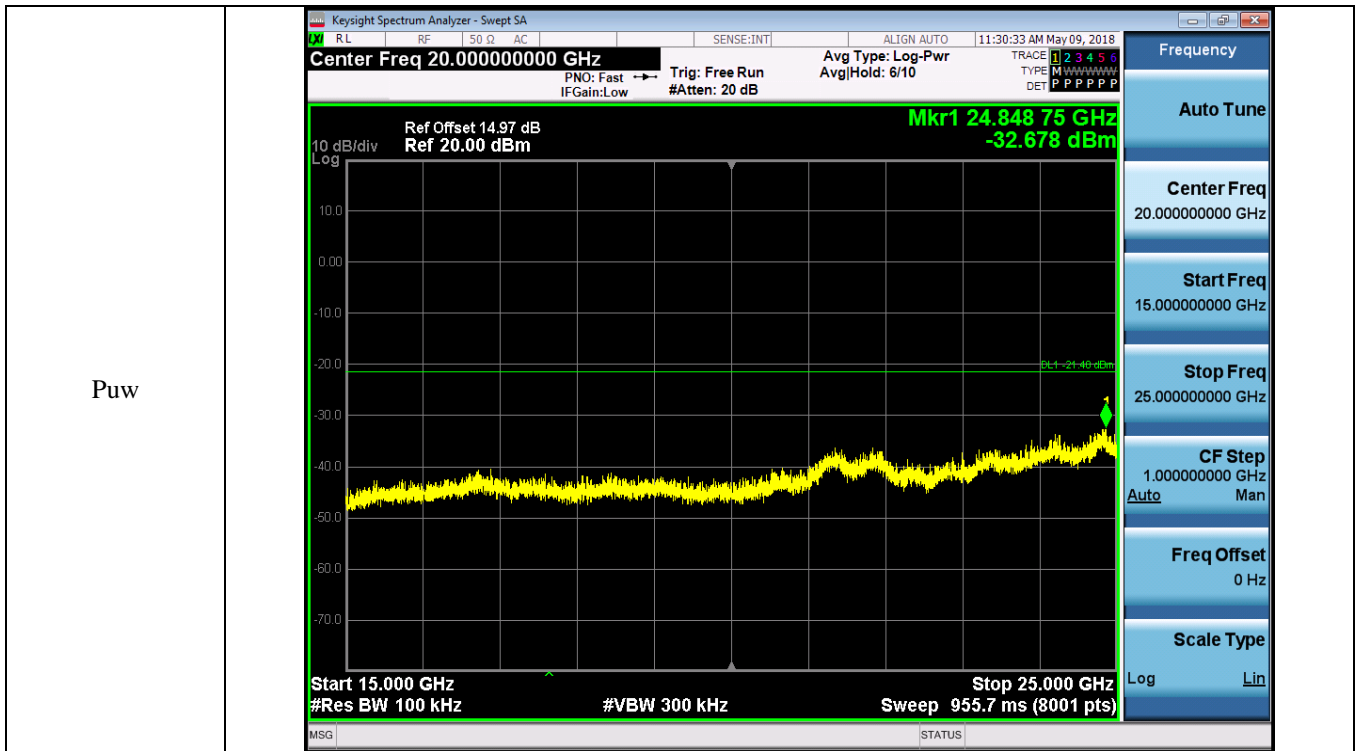
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	-1.477	<Limit	PASS
GFSK	MCH	-1.481	<Limit	PASS
GFSK	HCH	-1.621	<Limit	PASS

## Test Graph

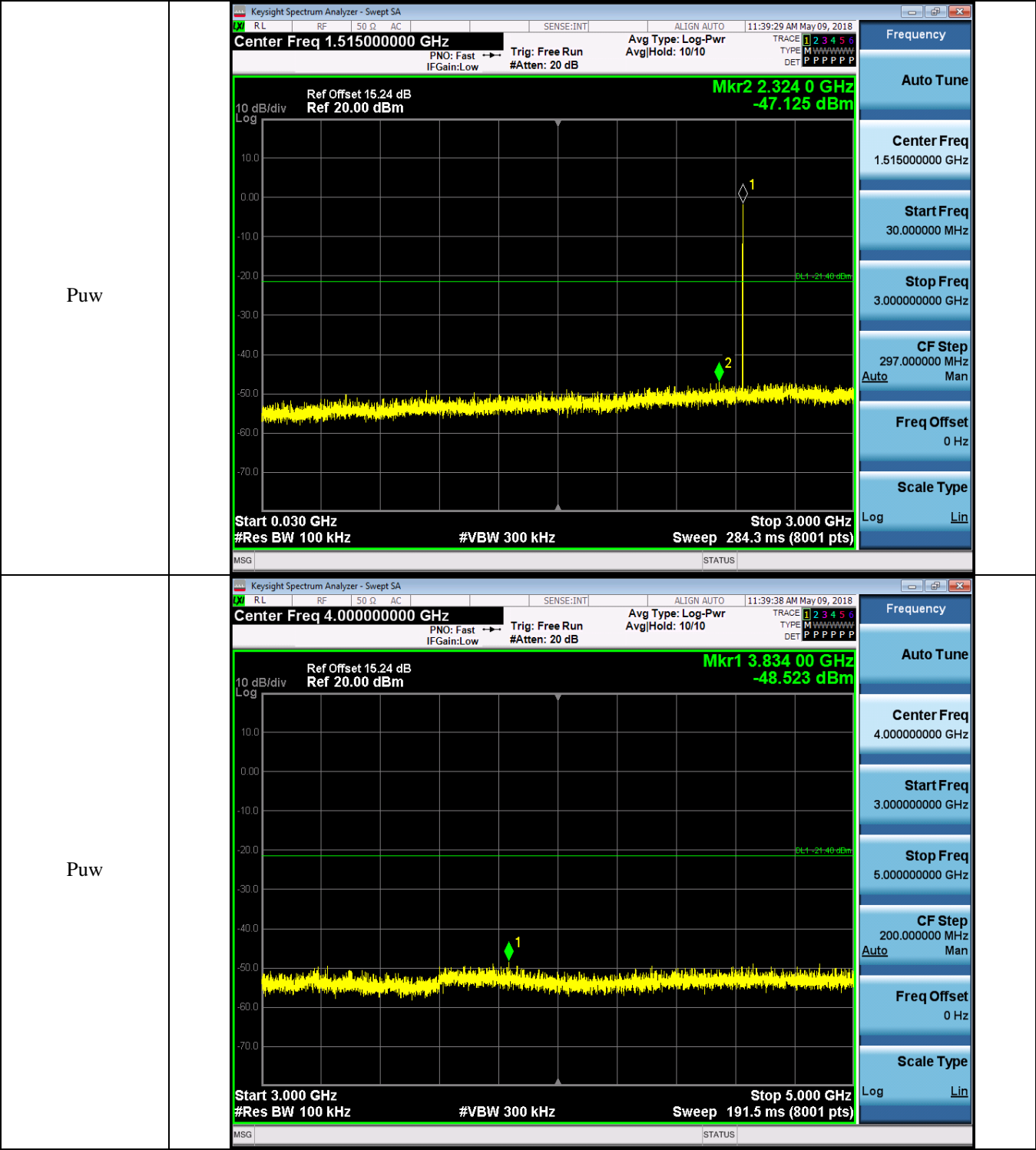


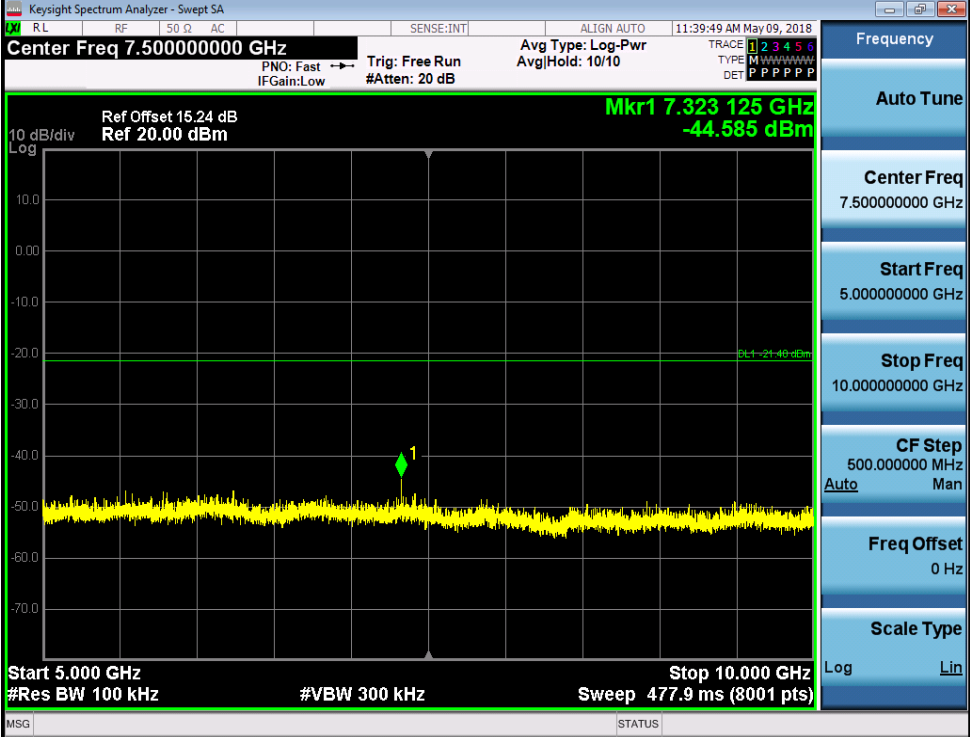
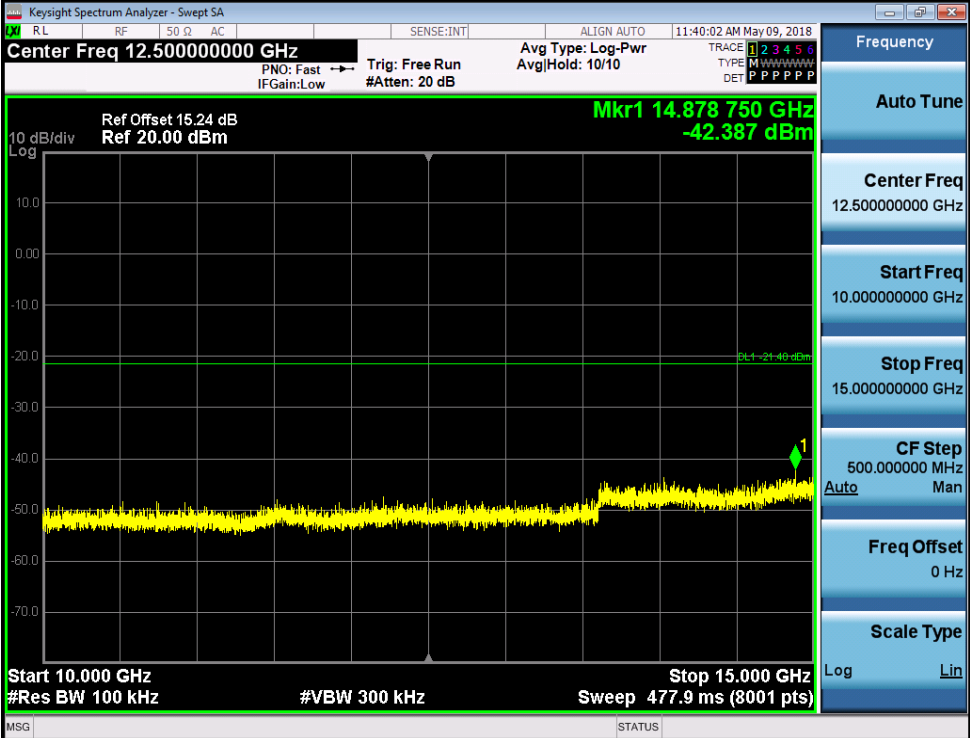


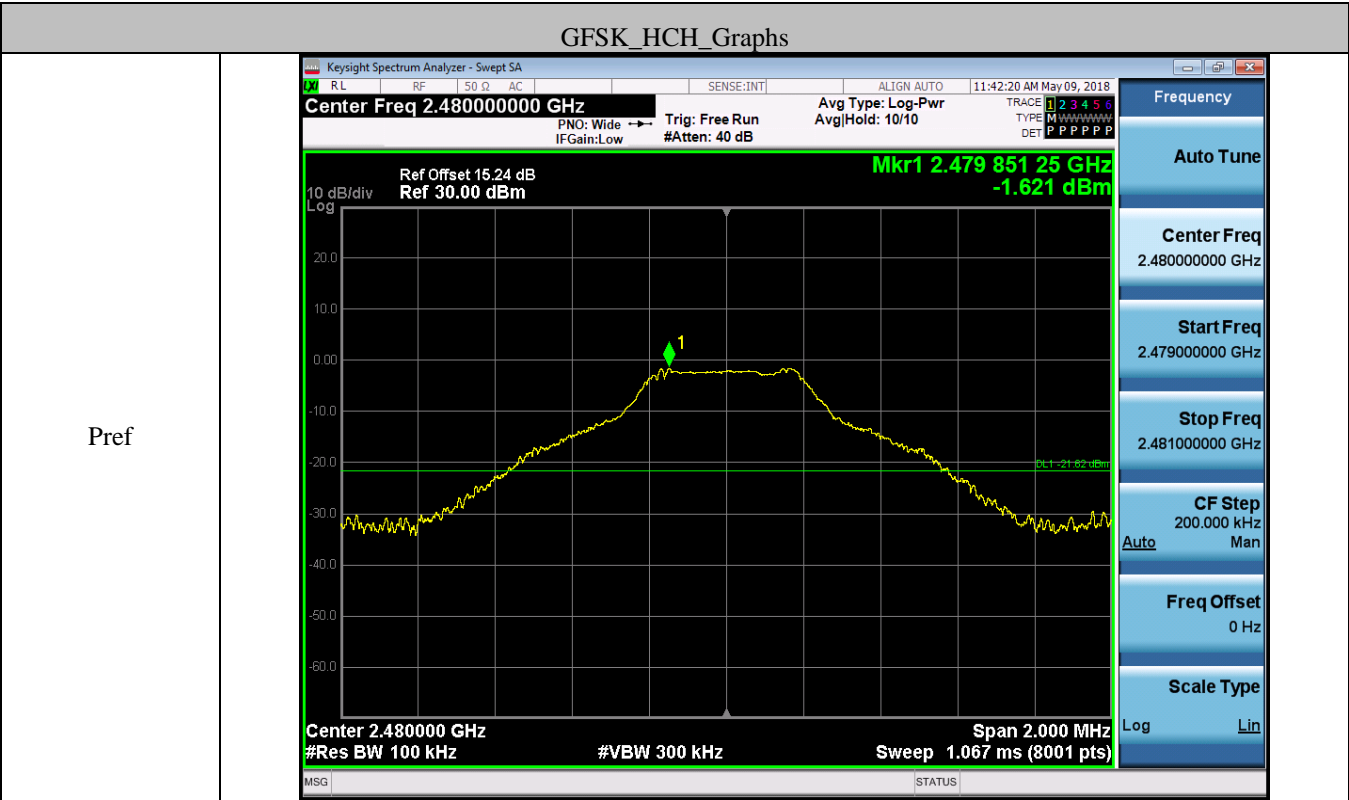
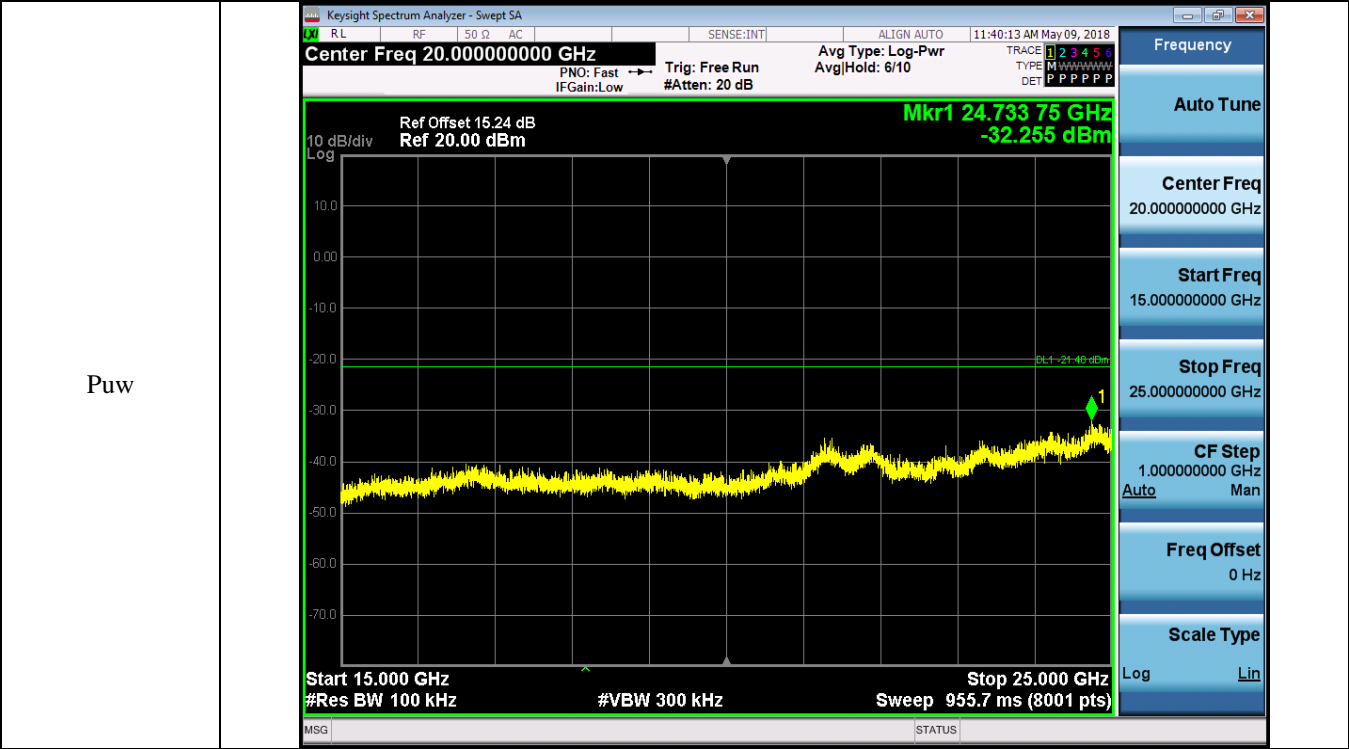


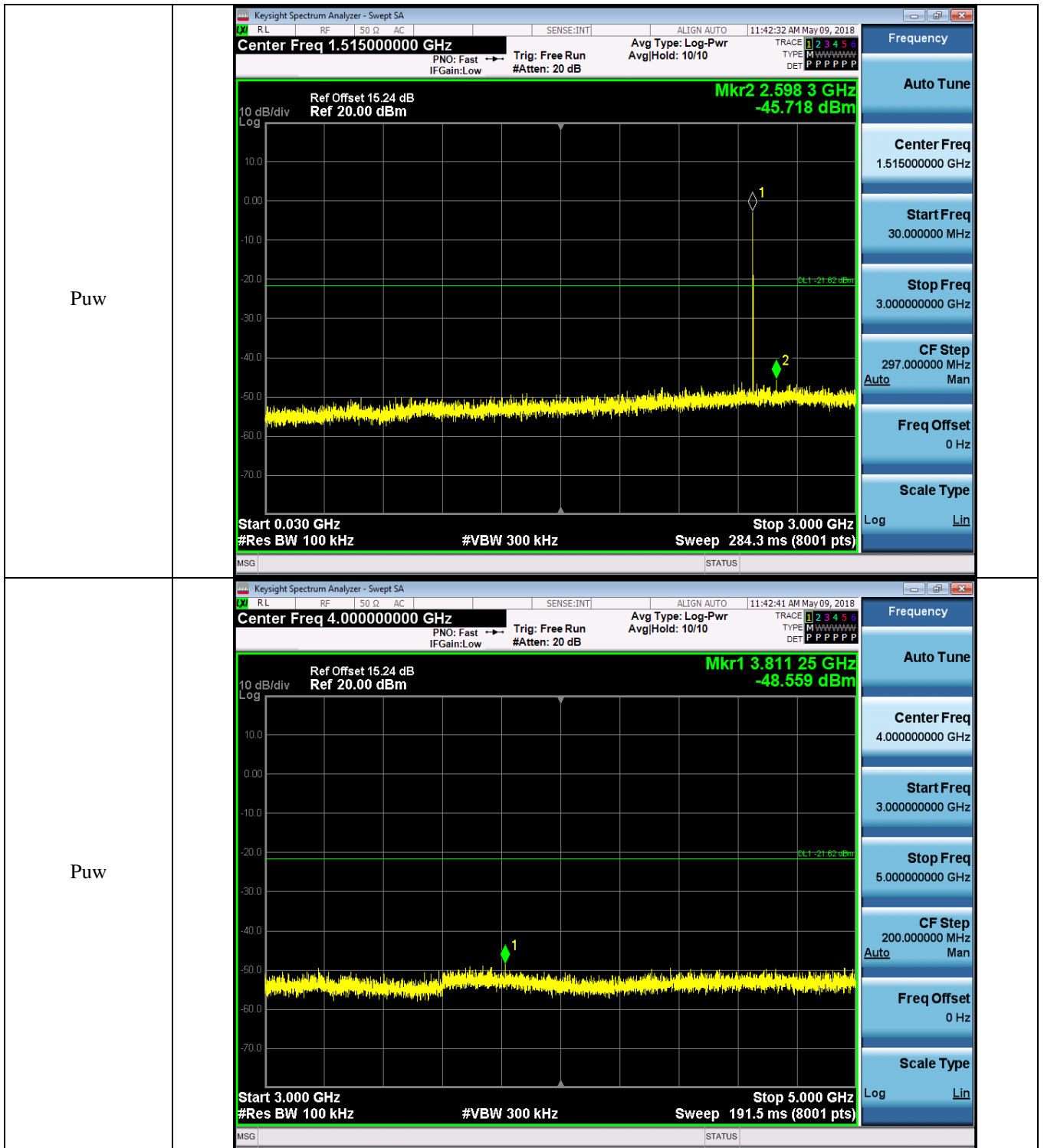


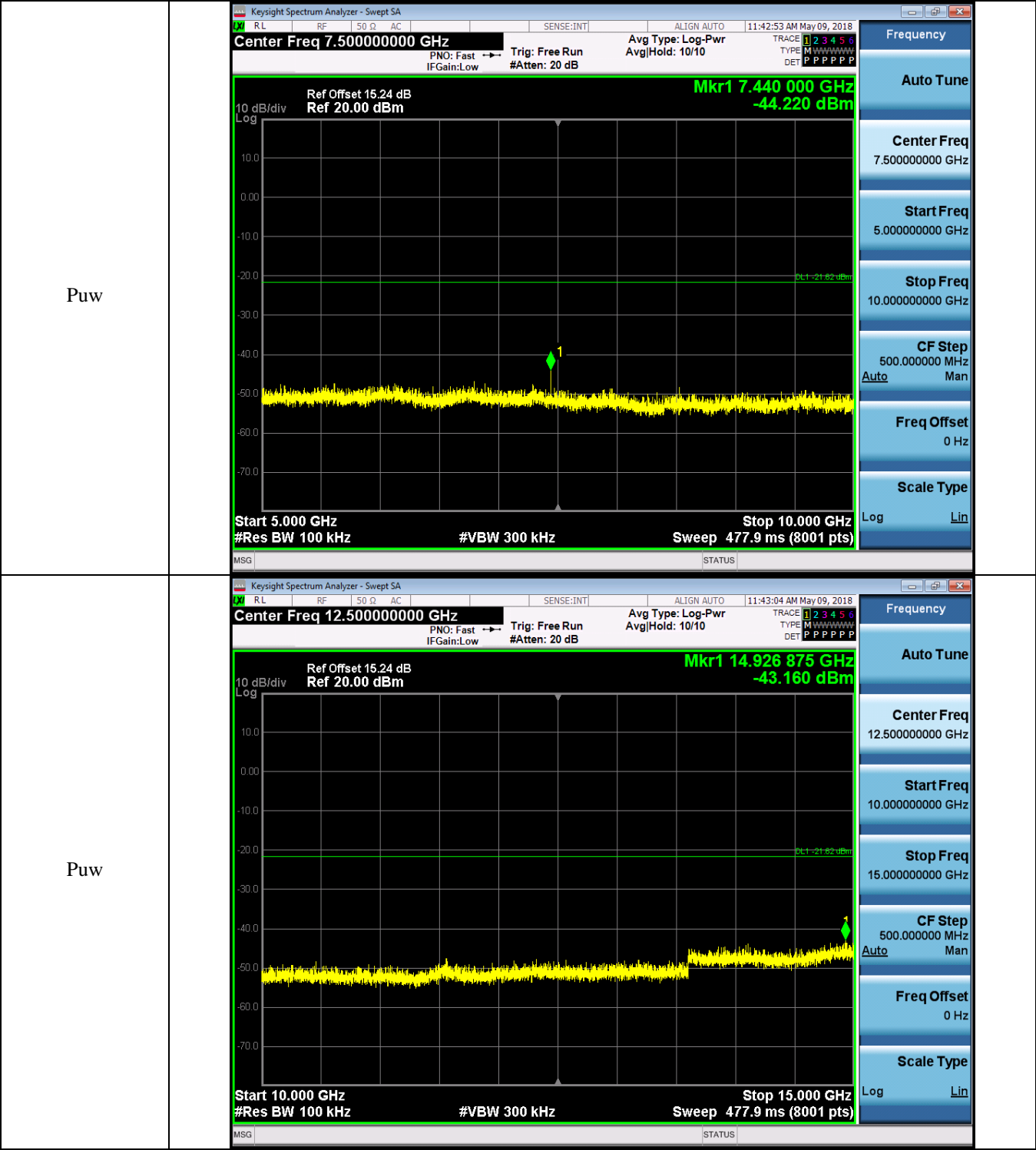


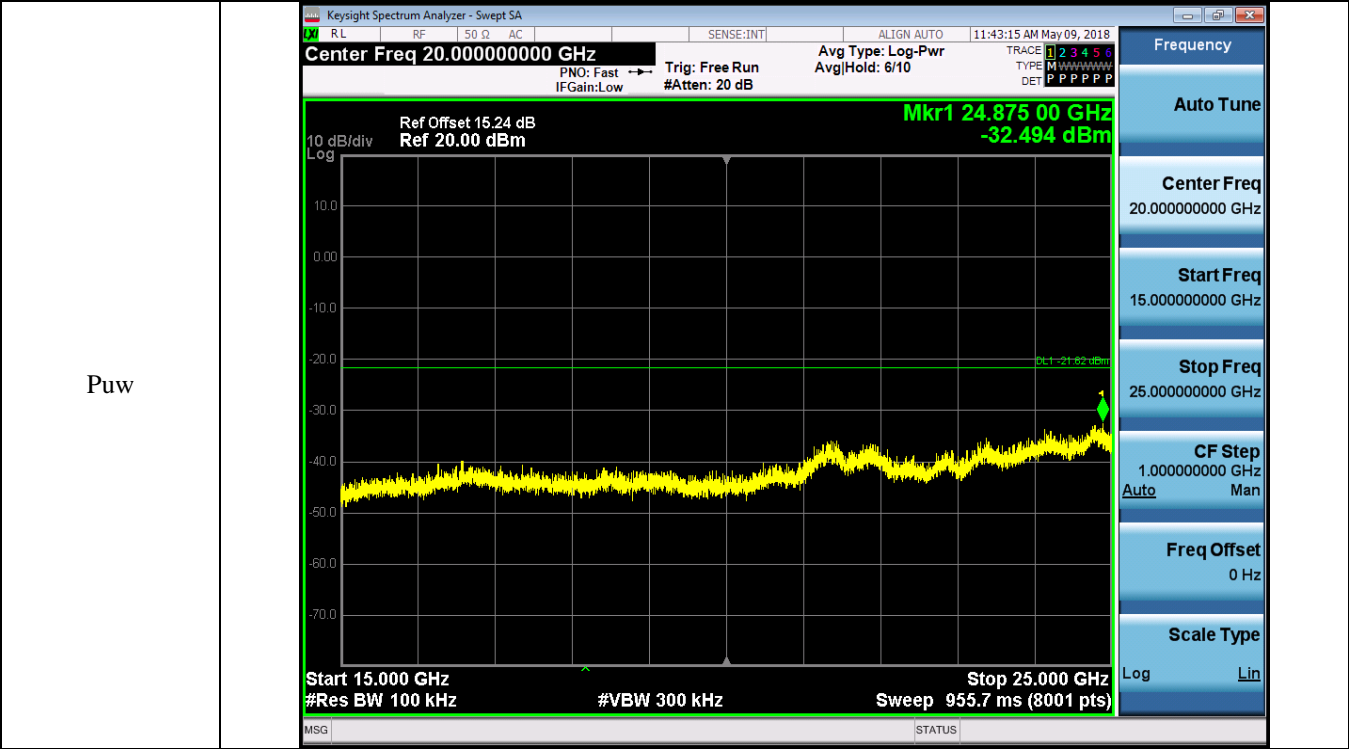


<p>Puw</p>	 <p>Keysight Spectrum Analyzer - Swept SA</p> <p>Center Freq 7.500000000 GHz</p> <p>Ref Offset 15.24 dB Ref 20.00 dBm</p> <p>Mkr1 7.323 125 GHz -44.585 dBm</p> <p>Start 5.000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 477.9 ms (8001 pts)</p> <p>Stop 10.000 GHz</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 7.500000000 GHz</p> <p>Start Freq 5.000000000 GHz</p> <p>Stop Freq 10.000000000 GHz</p> <p>CF Step 500.000000 MHz Auto</p> <p>Freq Offset 0 Hz</p> <p>Scale Type Log</p>
<p>Puw</p>	 <p>Keysight Spectrum Analyzer - Swept SA</p> <p>Center Freq 12.500000000 GHz</p> <p>Ref Offset 15.24 dB Ref 20.00 dBm</p> <p>Mkr1 14.878 750 GHz -42.387 dBm</p> <p>Start 10.000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 477.9 ms (8001 pts)</p> <p>Stop 15.000 GHz</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 12.500000000 GHz</p> <p>Start Freq 10.000000000 GHz</p> <p>Stop Freq 15.000000000 GHz</p> <p>CF Step 500.000000 MHz Auto</p> <p>Freq Offset 0 Hz</p> <p>Scale Type Log</p>







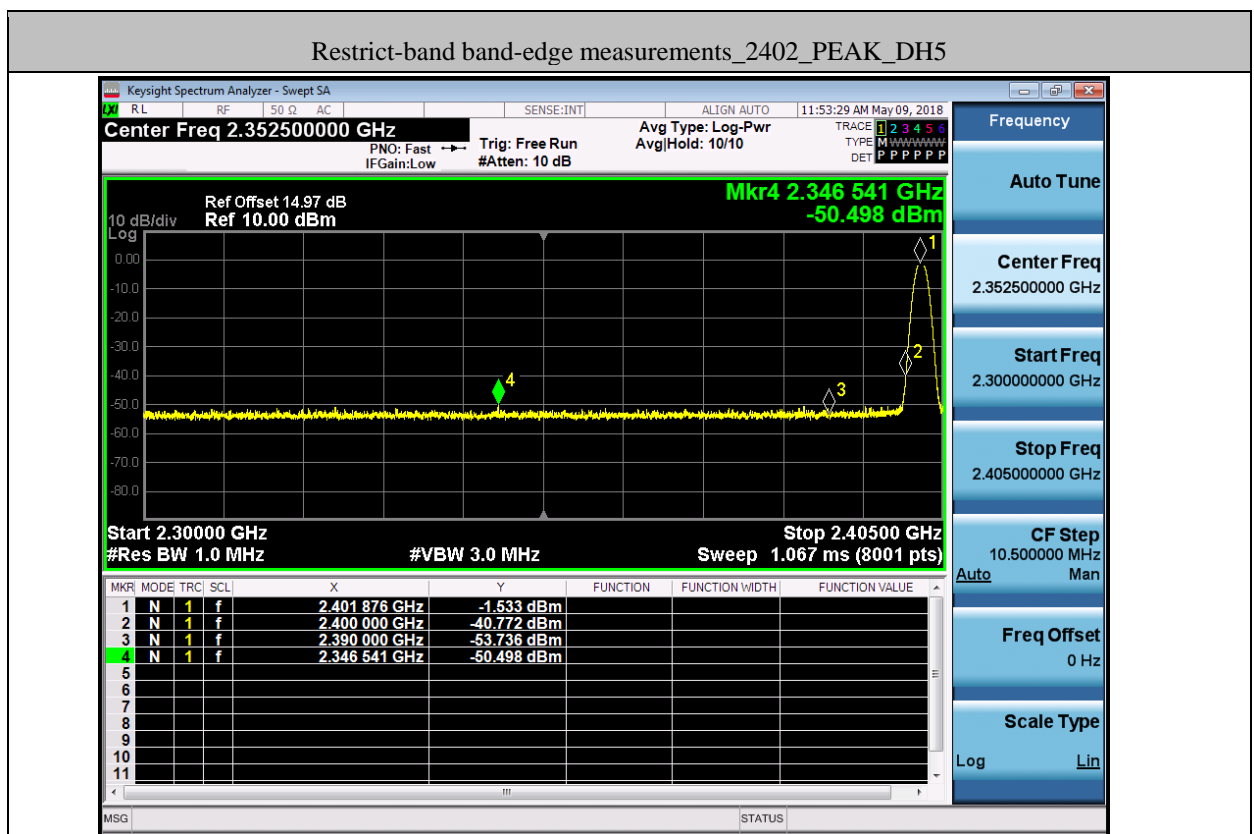


## . Appendix H):Restrict-band band-edge measurements

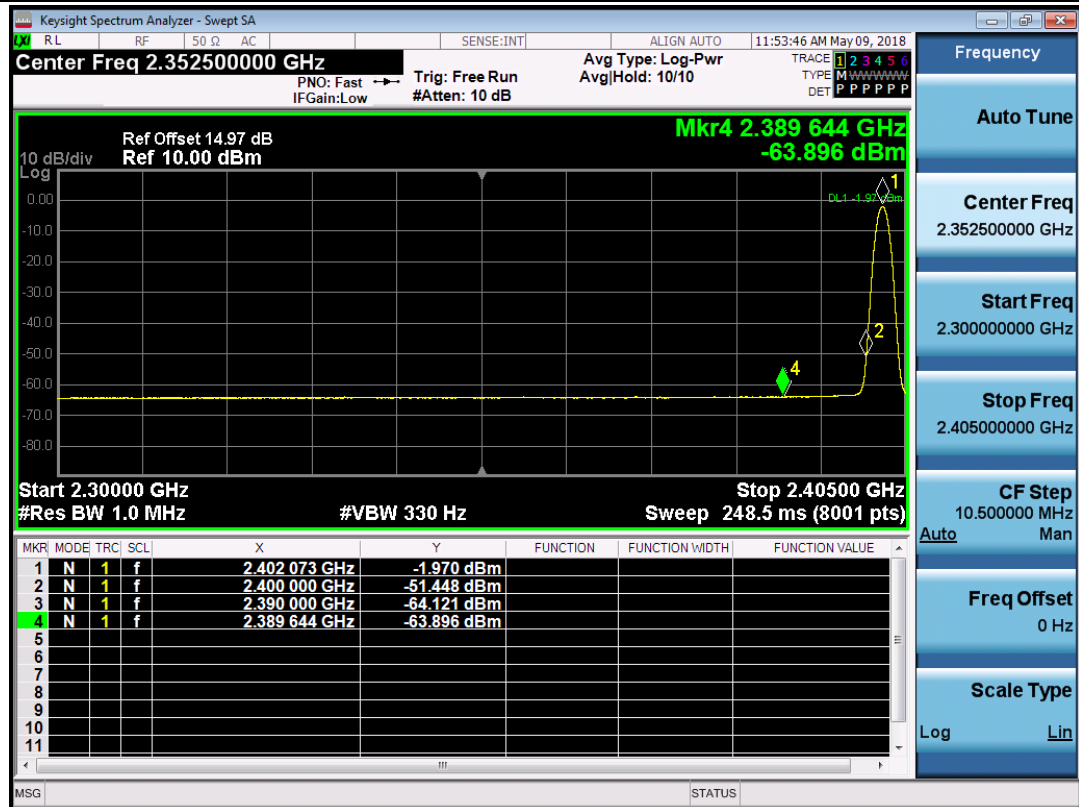
**Result Table**

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
GFSK_DH5	On	2346.5	-50.498	2.00	0	46.572	PEAK	74	PASS
GFSK_DH5	On	2389.6	-63.896	2.00	0	33.174	AV	54	PASS
GFSK_DH5	On	2390.0	-53.736	2.00	0	43.334	PEAK	74	PASS
GFSK_DH5	On	2390.0	-64.121	2.00	0	32.949	AV	54	PASS
GFSK_DH5	On	2483.5	-53.541	2.00	0	43.529	PEAK	74	PASS
GFSK_DH5	On	2483.5	-63.096	2.00	0	33.974	AV	54	PASS
GFSK_DH5	On	2500.0	-53.837	2.00	0	43.233	PEAK	74	PASS
GFSK_DH5	On	2500.0	-63.792	2.00	0	33.278	AV	54	PASS

**Test Graph**



### Restrict-band band-edge measurements\_2402\_AV\_DH5



### Restrict-band band-edge measurements\_2480\_PEAK\_DH5

